NATIONAL REPORT

-MEXICO-

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INTRODUCTION

Very few studies have been focused on seahorses in Mexico and, therefore, hardly any information is available about seahorse populations and fisheries in Mexico. Currently, no permits for capturing seahorses are issued in Mexico; therefore, traded specimens are incidentally captured in other fisheries, captive-bred or captured illegally. In 2000, people from Project Seahorse carried out a study concerning seahorse capture and trade in Mexico (Baum and Vincent, unpublished). They conducted informal interviews with fishermen, buyers, middlemen, as well as some governmental and research institutions. This study has not yet been published. However, it offers an overall picture of the capture and trade of these species in the country and, therefore, has been referred to and cited frequently throughout this report. In addition, the archives of governmental dependencies and other bibliographic material, as well as experts on this topic, were consulted.

I. Information on Wild Populations

a. Seahorse species in Mexican waters

Four seahorse species have been recorded in Mexican littoral and continental waters.

Hippocampus erectus

Common name: Lined Seahorse, Northern Seahorse, Caballito de mar, Caballito de mar del Norte (synonyms: *H. hudsonius, H. marginalis, H. fascicularis, H. punctulatus, H. hudsonius punctulatus*)

It reaches a size of up to 18.5 cm. It generally inhabits marine grass beds in shallow waters, but has been found in depths up to 70m (Indiviglio, 2002). Its color is quite variable, brown olive, orange or yellow with dark lines throughout its neck (Colección Ictiológica del IB-UNAM).

This species is often associated with submerged marine vegetation. It only occasionally penetrates into fluvial bodies and, in fact, it is uncommon in low-salinity waters. Nonetheless, Spring and Woodburn (1960) found it in waters with salinity between 21 and 34% near Tampa, Florida.

H. reidi

Common name: Slender Seahorse, Longsnout Seahorse, Caballito de hocico largo

It reaches a size of up to 18 cm. *H. reidi* inhabits waters with depths between 15 and 60m, and has been found attached to marine algae such as *Sargassum* (Indiviglio, 2002). It is distinguished from other seahorses by its long snout and its numerous dark-brown spots contrasting with its light-brown body (Colección Ictiológica del IB-UNAM). Baum and Vincent (unpublished) estimated this species' average weight from 3 dry specimens. It was 3.34 ± 1.85g.

H. zosterae

Common Name: Dwarf Seahorse (sinónimo: *H. regulus*), Caballito enano.

It reaches a size of only 2.5cm; only the pygmy seahorse of the Australian southeast coast is smaller. It is found in shallow waters and is often associated with marine grass beds, especially with species of the *Zosterae* genus, from which its scientific name is derived (Indiviglio, 2002). It is distinguished by the dark margin of its dorsal fin (Colección Ictiológica del IB-UNAM). Baum and Vincent (unpublished) indicate that this species is not in the market because it is very small and also because it is hardly trapped in trawl nets. However, Espinosa (pers. comm.) states that he has found this species in the curio trade.

H. ingens

Common name: Pacific Seahorse, Caballito del Pacífico

It normally reaches a size of 19cm, although 30cm specimens have been reported. This species generally inhabits shallow waters but has also been found in depths of up to 60m (Indiviglio, 2002). It is usually found in open waters associated with reefs and other consolidated structures, as well as with coral banks and sponges; it is also closely linked to macro-algae beds; it is not easily observed in part due to its ability to camouflage itself among the algae (De la Cruz, 1991). *H. ingens* specimens are more often found between the surface and waters within 10m depths. In contrast to the majority of seahorses, this is a nocturnal species. It reaches sexual maturity in one year and gives birth to approximately 400 seahorses after a two-week gestation period. Its coloration is principally dark red or yellowish green with bands throughout its body every six or seven rings; it can also display white spots (Colección Ictiológica del IB-UNAM). In laboratory conditions, it has been observed that this species reaches maturity after 6 months and it can give birth to as many as 3000 young (Barón and Sandoval, pers. comm.).

b. Area of distribution

Hippocampus erectus

From Nova Scotia and Georges Bank (Canada) to Argentina, including the Gulf of Mexico and the Caribbean.

Reported Mexican localities: Tamaulipas: Desembocadura del Río Bravo; Veracruz: Sistema Estuarino Lagunar Tuxpan-Tampamachoco; Campeche: Laguna de Términos, Sonda de Campeche, Playa Bonita; Yucatán: Plataforma continental; Quintana Roo: Plataforma continental.

Localities from anecdotic data: Veracruz: Sistema Arrecifal Veracruzano (reefs of Isla Verde, Cabezo and Isla de Sacrificios), Playón de Hornos, the mangrove zone of Boca del Río and Las Barrancas (Martínez, pers. comm.).

H. reidi

From North Carolina (U.S.) to Río de Janeiro (Brazil).

Reported Mexican localities: Quintana Roo: Canal de Bacalar Chico.

Localities from anecdotic data: Quintana Roo: Contoy, Mujeres and Cozumel Islands; Yucatán: Bahía de Celestún and Puerto Progreso (Baum and Vincent, unpublished).

H. zosterae

From Florida to the south occidental part of the Gulf of Mexico.

Reported Mexican localities: Tamaulipas: Laguna Madre de Tamaulipas; Veracruz: Laguna de Tamiahua; Campeche: Laguna de Términos and Champotón.

H. ingens

From San Diego, California (U.S.) to the North of Peru, including the Gulf of California and the Galapagos Islands.

Reported Mexican localities: Baja California: Cabo San Miguel, Punta el Machorro; Baja California Sur: Loreto, Bahía Concepción, Bahía Magdalena, Laguna Ojo de Liebre, Laguna San Ignacio, Bahía de la Paz, Ensenada de la Paz, Bahía las Almejas, La Florida, Cabo Pulmo y Cabo San Lucas; Sonora: Puerto Peñasco, Playa el Cochorit en Empalme, Bahía de Guaymas, Estero del Soldado, Isla Tiburón; Sinaloa: Río Piaxtla, Río Fuerte, Río Presidio; Oaxaca: Laguna de Chacahua, San Mateo del Mar; Chiapas: Los Mangas, Río San Nicolás.

Localities from anecdotic data: Guerrero: Bahía de Acapulco and Bahía de Zihuatanejo. In Sonora there have been seahorses trapped during the shrimp fishery of boats unloading at Puerto Yavaros (Sandoval-Muy, pers. comm.).

c. Abundance

H. erectus

The IUCN (2003), considers the worldwide population of *H. erectus* as vulnerable, based on inferred declines of at least 30% caused by targeted catch, incidental capture, and habitat degradation.

Particularly, in the reef area close to the Veracruz and Antón Lizardo localities, *H. erectus* is a not very abundant species. During the 10 years that the Veracruz Aquarium has been operating, only 5 specimens have been received as a donation (Martínez, pers. comm.).

This species' records as incidental capture in the scale fishery in Banco de Campeche are sporadic (Programa de Observadores Científicos de Pesquerías de Escama del INP). The prospecting cruises for shrimp trawl fishery report have captured some specimens during their activities (INP's technical reports and Programa de Observadores Científicos de Pesquerías de Escama).

H. erectus is the most abundant species in the Gulf of Mexico and the Caribbean Sea (Baum and Vincent, unpublished).

H. reidi

There are no published data on this species' abundance or population trends.

According to the World Conservation Union (IUCN, 2003), no data are available for this species.

H. erectus and *H. reidi* are not distinguished by the fishermen throughout the Caribbean coast. The fishermen mentioned that they capture the largest number of seahorses (*H. erectus* and *H. reidi*) in Quintana Roo near Contoy, Mujeres and Cozumel Islands, and in Yucatan near Celestún Bay and Puerto Progreso. Most of the fishermen associated the capture of large numbers of seahorses with rocky areas, and with coral reefs in that order. Few associated them with seagrass and algae. According to fishermen in Veracruz and Tampico, seahorse captures are scarce probably because the water is deeper (Baum and Vincent, unpublished).

H. zosterae

There are no published data on the abundance or population trends for this species.

According to the World Conservation Union (IUCN, 2003), no data are available for this species.

H. ingens

The IUCN (2003), considers the worldwide population of *H. ingens* as vulnerable, based on inferred declines of at least 30% caused by targeted catch, by-catch, and habitat degradation. According to fishermen interviewed by Baum and Vincent in 2000, the regions where most seahorse catches have been recorded were the Oaxaca and Chiapas coasts. Within these regions, Salina Cruz, Barra San Francisco and Puerto Arista were mentioned as the major catch areas. Interviewed divers and biologists mentioned that seahorses were very uncommon in the Gulf of California, and that populations in Puerto Vallarta have apparently declined since the early 1990s. Fishermen stated that they catch a great number of seahorses in algal areas, rocks and/or corals, and at depths between 1 and 55m, and more commonly between 20 and 35m. The species is abundant throughout the Mexican Pacific coast.

d. Monitoring programs

A monitoring program has been set up in specific areas in Veracruz where seahorses have been recorded. In the short term the program intends to assess populations of *H. erectus* in the Veracruz Reef System (VRS). Recently, fieldwork has been limited by the presence of north winds in the Gulf of Mexico region. Since 1999, the Veracruz Aquarium, together with the University of Veracruz, has been carrying out several monitoring programs that include biological characterization of the VRS ichtyofauna, where seahorses have not yet been reported (Martínez, pers. comm.).

Fish monitoring programs, although not specific to seahorses, are being carried out in the Parque Nacional Arrecifes de Cozumel. Since 2001 a group of volunteers, mostly tourist service assistants coordinated by the park administration, carry out periodic fish censuses in several localities within the park.

The Natural Protected Areas and Marine Parks monitoring program include a flora and fauna research section at the ecosystem and community levels. Since 1997 the INP's (Mexican Fisheries Institute's) Scientific Observers of Inshore Fisheries Program (Programa de Observadores Científicos de Pesquerías de Escama) has been monitoring shrimp trawl catches in the Gulf of Mexico.

II. Nature of Seahorse Fisheries

a. Commercial, artisanal and subsistence fisheries

In Mexico no fishery targets seahorses. Nevertheless, seahorses represent a low bycatch percentage during some commercial fishing activities, mainly through shrimp fisheries with trawl nets, sometimes in nearby areas or within marine natural protected areas, as in the Biosphere Reserve "Alto Golfo de California and Delta del Río Colorado" or the VRS in the Gulf of Mexico, Laguna de Términos and Loreto (Pacific littoral).

According to Baum and Vincent (unpublished), although no fishery targets seahorses in the Gulf of Mexico or the Caribbean Sea, in the Pacific *H. ingens* is captured as black market aquarium fish. They mention that in Acapulco, hookah divers' cooperatives targeting seafood (e.g., oysters) also capture seahorses if they are found along the way. According to interviewed divers and aquarium traders, in 2000 there were between 10 and 15 divers in the area selling seahorses to Mexico City aquariums.

According to anecdotic reports of fishermen, the highest number of seahorses is captured between June and July. Baum and Vincent (unpublished) state that in the artisanal fishery, seahorse bycatch is very scarce. The artisanal fishermen affirm that it is very difficult for seahorses to be caught in their nets because of the small mesh size.

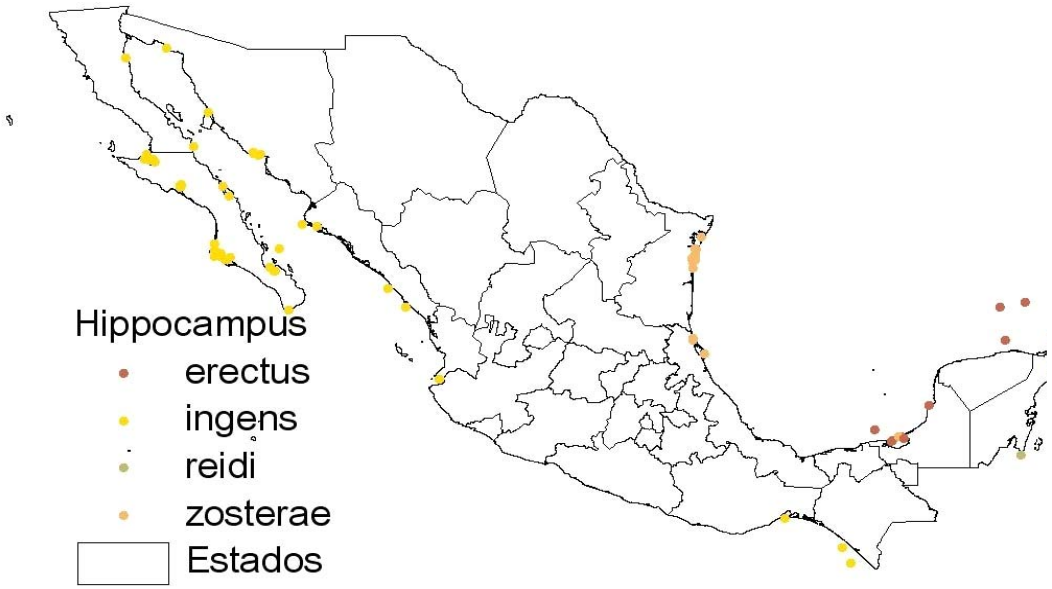
Based on the information provided by Baum and Vincent (unpublished), probably a great part of the dry seahorses coming from Mexico and becoming part of the international trade are incidentally caught during shrimp fishing operations. In the year 2000, there were 658 shrimp fishery ships operating in the Gulf of Mexico and the Caribbean, and 1,313 in the Pacific (SEMARNAT, 2002). However, seahorses are not captured in every shrimp fishery zone, and the ships operate in different zones. Therefore, there does not seem to be a direct relationship between the size of the shrimp fishery float and seahorse bycatch. Besides, the number of shrimp fishery ships operating in Mexico each season tends to diminish due to age of the float, some are withdrawn and others do not work all seasons due to operation costs. Finally, sunken ships have not been replaced.

b. Cultured seahorses in Mexico

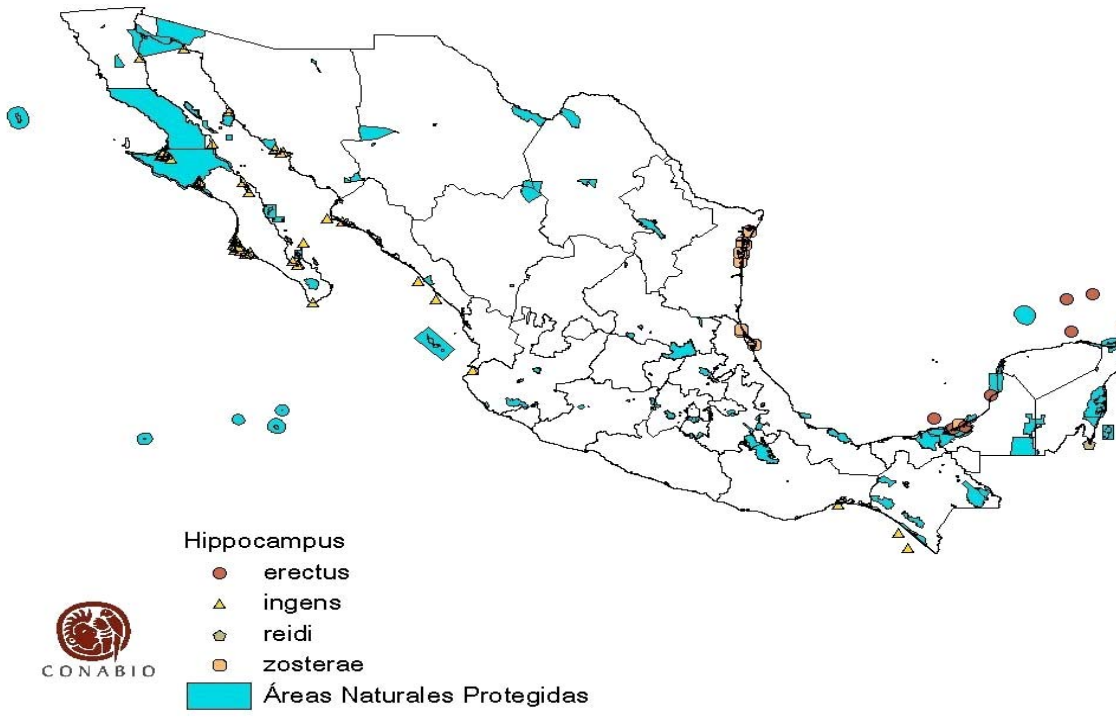
Until now, five institutions that culture seahorses in Mexico have been identified: four of these institutions culture *H. ingens* in the Pacific (the Universidad Autónoma de Sinaloa, the Mazatlan Aquarium, Maricultura del Pacífico S.A. and Ingens Cultivos Marinos) and one in the Gulf of Mexico cultures *H. erectus* (Veracruz Aquarium). Three of them have reproduction programs linked to conservation.

Between 1997 and 2000, one of the farms sent between 1600 and 2400 specimens per annum to a wholesaler, although they indicate that production reached up to 400 individuals per week, apparently higher than the national market demand. They stated that there is a low mortality and that the selling season goes mainly from November to May (avoiding the warmer months to diminish the incidence of parasitic diseases). The specimen sizes varied between 5 and 6cm.

The Mazatlan Aquarium began a marine fish reproduction program with the goal of producing fishes for exhibition. On the other hand, the University of Sinaloa fish reproduction program includes seahorses, and since the beginning, the possibility of trading them has been considered. Both of these are low-tech hatcheries namely outdoor confiners (tanks). The parental generations used in these programs are adults of *H. ingens* caught in the wild, since none of the mentioned institutions use a close-cycle culture system. The Mazatlan Aquarium captures between 40 and 50 specimens per annum for this purpose, while the University captures approximately 10 specimens.



Map 1- Records of Hippocampus in Mexico from Scientific Collections (CONABIO's Data Base SNIB, 2004)



Map 2: Catch records of Hippocampus and Natural Protected Areas from Mexico (CONANP-CONABIO, 2004).

The main problem they face is juveniles to grow until reaching maturity, mainly related to their nourishment, followed by some problems due to algal growth in the tanks and infections during summer. Finally, the lack of resources for aquaculture programs is another fact that has negatively impacted both programs.

c. Estimated number of fishermen

There are no fishermen dedicated to seahorse fishing. d. Fishing Gear

The incidental capture occurs during shrimp fishing with trawl nets.

d. Legal frame

The legal frame that governs the use and protection of seahorses includes regulations currently in force. The most important are the following:

Ley General de Vida Silvestre (Wildlife General Law)

This was published in the Diario Oficial de la Federación (DOF; Federal Official Diary) on July 3, 2000. It regulates the use of all marine species included in any protection category. Specifically, it establishes the conditions for capture and transport permits and authorizations.

Norma Oficial Mexicana (Mexican Official Norm) NOM-059-SEMARNAT-2001

This was published in the DOF on March 6, 2002 and came into force on May 7, 2002. This provides for Environmental Protection of wild flora and fauna of Mexican native species, includes risk categories, and its listing specifications, exclusion or change as well as a list of species at risk list.

At present, the 4 seahorse species distributed in Mexico namely *Hippocampus erectus* (caballito de mar- lined seahorse), *H. ingens* (caballito del Pacífico- Pacific seahorse), *H. reidi* (caballito de hocico largo- long-snout seahorse), and *H. zosterae* (caballito enano- dwarf seahorse) are listed in the NOM-059-SEMARNAT-2001 as species subject to special protection. That is to say that they could become at risk due to factors that affect their viability, reason for which the need to propitiate their recovery and conservation, or the recovery and conservation of associated species' populations, is determined.

Trámite de certificación de la legal procedencia para el traslado de mamíferos y quelonios marinos así como demás especies marinas en riesgo (Certification of the legal origin for the transport of marine mammals and chelonians as well as other marine species at risk) PROFEPA-03-003 (May 29, 2003)

This requires those who want to transport organisms, parts or by-products of seahorses, to obtain the certification of legal origin before transportation.

Reglamento Interior de la Secretaría de Medio Ambiente y Recursos Naturales (Internal Regulations of the Environmental and Natural Resources Secretary)

This was published in the DOF on January 21, 2003, and establishes the obligation of the Federal Attorney's office of Environmental Protection (PROFEPA) to look after the enforcement of the in-force legislation regarding species at risk. PROFEPA carries out inspection and enforcement actions for priority species, particularly within natural marine and littoral protected areas. PROFEPA, together with the Mexican Marine Army Secretary, develops special operatives in priority marine zones to discourage illegal activities on the protected marine resources.

Código Penal Federal (Federal Penal Code)

From February 6, 2002 the Código Penal Federal, establishes in Article 420 that punishment of 1 to 9 years in prison and for the equivalent of a 300 to 3000 day penalty will be imposed on whomever illegally:

"*Carries out any activity with trafficking purposes, or captures, posses, transports, stores, introduces to the country or extracts from it, some specimen, its products or byproducts and other genetic resources, from prohibited terrestrial or aquatic wild flora or fauna species considered endemic, at risk, at risk of extinction, subject to special protection or regulated by any international treaty of which Mexico is party of; or damage to any specimen of terrestrial or aquatic wild flora or fauna species indicated in the previous paragraph.*"

Furthermore, the code states that an additional punishment of three or more years of prison and up to 1000 days of additional penalty will be applied when the conducts described in the article are carried out in or affect a protected natural area, or when they are carried out for commercial purposes. In any cases of illegal use of seahorses, PROFEPA is obliged to present the presumed offenders to the Federal Public Ministry.

The legal frame for seahorse protection in Mexico is relatively recent, and the enforcement of the legal frame through inspection and surveillance actions and based on true information on this species' trafficking is being strengthened.

CITES Appendix II

Includes all *Hippocampus* species and will be in force from May 2004.

To obtain an authorization to export specimens, parts or byproducts of a wildlife species not listed in the CITES appendices, it is necessary to fulfill the following requisites:

- Complete the official application
- Pay the corresponding rights
- Prove the legal origin of the organisms, products or byproducts to export, through notifications of port arrivals, capture permits or presenting selling bills (including the number captured or use the corresponding permit)
- A non-detriment finding by Conabio as the Scientific Authority should be given to DGVS before issuing the permit.

In the case of the species included in the CITES Appendices, it is also necessary to prove that the organisms came from a registered "Unidad de Manejo para la Conservación de la Vida Silvestre" (UMA; Management Unity for Wildlife Conservation). If it deals with live organisms, they must have a tracking system. The paper work is carried out at SEMARNAT's Dirección General de Vida Silvestre (DGVS; Wildlife General Administration). Once the product has been exported, the permit holder has ten business days to hand in a photocopy of the customs request and a selling invoice of the organisms.

e. Market Preferences in Mexico

Commerce of Dried Seahorses

Dried seahorses in Mexico are only used as handicrafts. Use in traditional medicine or other purposes have not been reported. A field survey carried out in the Crafts Market of Veracruz (an important

commercial port in the Gulf of Mexico's Mexican coast) showed that seahorses were used for making key rings or were sold dry as curios. Prices varied according to the season and demand. According to the testimony of the retailers these were not captured in the VRS, but brought from Campeche (Martínez, pers. comm.).

Commerce of Live Seahorses

Capture of seahorses for aquaria is very limited. The aquarium industry in Mexico developed in the late 1980s. In 1994 all commercial permits for capturing marine ornamental species were cancelled. Only "pesca de fomento" permits (i.e., capture permits linked to research or population assessment) were issued. At the present time fishing permits do not allow for the capture of seahorses for any purpose. In the early 1990s the aquarium industry experienced a "boom" and most of the captures in the Pacific Coast were illegal. Baum and Vincent report that for the year 2000, Mexico along with Brazil, had the most important aquarium trade industry in Latin America in terms of volume and techniques.

Baum and Vincent's study (unpublished) states that there are two markets for aquarium fish in Mexico City, which normally offer low prices but in which fish are generally not looked after properly. Retailers normally store seahorses in independent aquaria so that they do not have to compete for food or defend themselves from other fish. Generally, seahorses attach to airing hoses or air pumps since there are no other suitable structures inside the tanks. Some retailers reported a high mortality of these animals during the process of national commercialization, since they are sometimes stored in plastic bags for up to 48 hours. On the contrary, some importers indicated that this mortality rate dropped in legally imported organisms (Baum and Vincent, unpublished).

According to the same study, the trade network for live seahorses for aquaria is complex. Several commercial routes and sources of supply exist since buyers could go to several wholesalers or sell their fish in several cities. Among the sources of seahorses identified in the study are the aquaculture centers in Mazatlán as well as illegal catches along the Pacific coastline, mainly in Acapulco (Guerrero). Puerto Escondido (Oaxaca) was another important source for live seahorses. Retailers also reported that these animals were imported from Hawaii, Indonesia, Fiji, Philippines, Brazil, Australia and the Indo-Pacific (Baum and Vincent, unpublished), normally via the United States of America.

Seahorse trade in Mexico includes several levels. Sometimes wholesalers buy from middlemen, who buy directly from the fishermen. In other cases retailers buy directly from fishermen. Finally, wholesalers also sell to other wholesalers. It could be said then that there are at least 4 identified levels: fishermen, middlemen, wholesalers and retailers. At least 10 wholesalers sell seahorses in Mexico City and half of them have available stock. In all, 54 retail aquaria were identified, although not all main cities in Mexico were surveyed. In Mexico City alone at least 42 aquaria of marine fish were identified, 36 of which sold seahorses and 26 of which sold imported animals, 3 sold national, 3 sold both and in 4 their origin was unknown (Baum and Vincent, unpublished).

According to Baum and Vincent in 2000 between 8,200 and 4,600 seahorses were marketed within the country. Most of them came from legal imports, followed by cultured animals and lastly organisms caught in the wild.The main market for cultured seahorses is Mexico City, although they are also sold in cities like Guadalajara and Monterrey. A seahorse farm in Mazatlán reported sales between 1996 and 2000 of 1,700 to 2,500 animals/year. These numbers suggest that some of the seahorses of unknown origin sold in the nation could come from farms (Baum and Vincent, unpublished).

f. Landing Volumes

There are no official records.

g. Conservation Programs for Seahorses

Two institutions that grow seahorses in Mazatlán (Pacific littoral) have formal reproduction programs for conservation. Besides providing specimens for the national aquarium market, both programs reintroduceorganisms into the marine environment. Since 1996 the Mazatlán Aquarium has reintroduced between 800 and 1000 individuals/year, while the Autonomous University of Sinaloa reintroduces 50% of their production on average, which is normally small as compared to the reintroduction rate of the Aquarium. The University indicated that they encountered only minor difficulties in capturing animals in the zone and they attribute this to the reintroduction efforts of the programs. Nevertheless there is no formal reintroduction program in the area.

The Aquaculture Department of the Center of Scientific Investigations and Superior Studies from Ensenada, Baja California (CICESE) is developing a research program related to the physiology and reproduction of *Hippocampus ingens* on the Pacific coast. On the Atlantic coast, the Veracruz Aquarium has exhibited mainly imported seahorses. However, after obtaining parental generations and introducing a Reproduction and Maintenance Program for Seahorses, successful breeding of *Hippocampus erectus* was achieved, with around 700 individuals at present. Some of these individuals are exhibited to the public, others are part of research programs and some others are donated or exchanged with other institutions. Recently the Aquarium of Veracruz donated 50 juveniles to the Interactive Aquarium of Cancún, apart from giving talks on their biology and culture to students of the Aquaculture Engineering program in the Technological Institute of the Sea in Veracruz. During the summer of 2003, children 5 to 7 years old were given talks about seahorses as part of the Environmental Education Program.

Ongoing research is exploring the use of fish excluding devices in order to reduce bycatch in shrimp fisheries with trawl nets (National Fishing Chart, 2000). Natural Protected Areas (ANPs) from Mexico (see map 2) have management plans for the conservation of the marine ecosystems and habitat, including in the main areas of seahorse distribution. In some areas stricter restrictions exist for carrying out fishing activities, such as shrimp trawling, in order to minimize bycatch and habitat destruction.

Among the most important ANPs for seahorses are the areas of protection of flora and fauna "Laguna de Términos", the national parks "Reefs of Cozumel", Western Coast of Isla Mujeres, Punta Cancún and Punta Nizuc, "Bay of Loreto", "Cabo Pulmo", "Veracruz Reef System", "Contoy Island", and the "Vizcaíno Biosphere Reserve".

h. Illegal trade

In 2002, in the state of Puebla, PROFEPA carried out an inspection against an import and export company for not establishing the legal origin of a black seahorse, coming from Los Angeles, California, U.S.A. However, during the administrative procedure, the necessary legal documentation was presented and the case was closed.

On the 7th of November 2003, in Isla Mujeres, state of Quintana Roo (Mexican Caribbean), PROFEPA started a legal procedure against an aquarium company for not crediting the legal possession of *Hippocampus* species, confiscating 199 individuals (151 young, 32 juveniles and 16 adults). This is now an ongoing case.

Among the priority strategies of PROFEPA to reduce illegal action on marine resources is community surveillance with the help of the communities of the main areas/zones where protected marine species are exploited. In these areas, community surveillance has been implemented through committees, which qualify, advise and encourage them to maintain contact with PROFEPA delegations in the entity, mainly in marine protected areas.

III. International Trade Magnitude

a. Number of Levels

In accordance with official registrations between 1998 and 2000, six exporters have been identified as having provided seahorses to eight addresses in the United States of America. In some cases the exporter buys seahorses directly from fishing cooperatives. However, this information is not complete.

b. Retail and Wholesale Prices

Commercial Value of Dried Seahorses

Seahorse prices vary. In the Crafts Market of Veracruz (Gulf of Mexico Coast) and other tourist markets, dried seahorses are sold at 65.00 pesos as key rings and at 35.00 or 29.00 pesos if dry. In all cases the average size was 15cm for both males and females. Other registered prices were from 25.00 to 100.00 pesos in localities where seahorses do not occur. Proprietors argued that those were the approximate prices that they managed.

Dry specimens were found only in 2 of 150 locations where diverse related crafts were sold and in 5 locations the retailers maintained that they could get them. Only one retailer argued that selling seahorses was illegal and it was very difficult to find for sale.

According to Baum and Vincent, divers and fishermen were paid by middlemen between 20 and 50 pesos (US$2.11 to US$5.28), who in turn sold them to wholesalers in Mexico City at between 80 and 90 pesos (US$8.45 to US$9.51). They in turn sold them at various prices from 80 to 140 pesos (US$8.45 to US$14.79). Finally, aquariums sold them at between 120 and 400 (223 pesos = US$23.56 on average) when it was medium or small individuals and between 220 and 600 pesos for big or red colored individuals (390 pesos = US$41.20 on average).

Alternatively, prices to wholesalers of cultured *H. ingens* varied according to size. For example, an aquarist reported the following: 5 to 6cm (18 pesos = US$1.90), 6 to 8cm (22 pesos = US$2.32) and 8 to 11cm ($25 peso= US$2.64), although according to information of the wholesalers (buyers) the prices of cultivated seahorses oscillated between US$1 and US$10 and the sale price was normally doubled (Baum and Vincent, unpublished).

Finally, the price of captive-bred seahorses was generally lower than wild-captured ones and again the sale price was approximately double that of purchase, although they had prices of between US$0.75 to US$7.0 for wholesalers and up to US$16.00 for stores. Some examples worth mentioning are black seahorses (~20cm) imported from the Indo-Pacific via Los Angeles, with prices from US$3.45. Other specimens from Sri Lanka varied between US$0.75 and US$1.00. Finally *H. reidi* from Brazil, varied in price according to their coloration and size: US$1.60 (small), US$3.0 to US$3.50 (medium) and US$7.00 (medium, brilliant coloration). The average price of these animals in stores was 255 pesos (US$26.94) (Baum and Vincent, unpublished).

c. Implication of Customs and CITES in Ports

The government agency responsible for verification of the execution of the dispositions in this matter is the Federal Attorney's Office of Environmental Protection (PROFEPA), which from 1996 began the Inspection Program in ports, airports and borders, with the purpose of verifying the strict execution of restrictions (not tariffs) to the import and export of goods subject to regulation for the SEMARNAT, counteracting in this way the illegal traffic of wild life.

Table 1: Approximate Commercial Value of Dried Seahorses on Both Coasts of Mexico

Littoral	Amount paid to fishermen	Amount paid by the exporter to the middlemen	Value of Mexican seahorses in national market	Value of exported seahorses in national market
Caribbean	1-5 pesos/piece (US$0.11-0.53)	ND	10-70 pesos (US$1.06-7.40)	ND
Pacific	1-5 pesos/piece (US$0.11-0.53), 350 pesos/kg (US$36.98/kg)	E.g. 5 pesos/piece (US$0.53)	9-115 pesos (US$0.95-1.2)	E.g. 55 pesos/piece (US$5.81)

Source: Baum and Vincent (unpublished), using data from 2000.

Table 2: Export Authorizations for Seahorses 1998 - 2000*

Authorization No.	Date	Amount Authorized	Legal Transit[2]	Amount Sold[3]
004505	23-Jan-98	65	0	0
005138	03-Oct-98	100	100	0
005389	06-May-98	43	43	43
005719	11-Jun-98	100	100	100
006248	13-Aug-98	25	25	25
006462	09-Sep-98	100	100	100
008089	06-Apr-99	33	33	33
007538	29-Jan-99	140	140	0
008437	10-May-99	150	150	150
008525	19-May-99	7,080	0	0
007653	16-Feb-99	765	0	0
11589	10-May-00	100	100	100
11684	18-May-00	25	25	25
12612	07-Sep-00	134	134	0
13418	05-Dec-00	15	25	0
13446	07-Dec-00	20	20	0
11526	02-May-00	765	0	0
11940	16-Jun-00	2	2	0
	TOTAL	**9,662**	**997**	**584**

* Amounts in kilograms

1. Includes all export permits issued between 1998 and 2000. Cases in which a new permit was issued for the remnant of previous authorized amounts (but for which validity had expired) have been omitted

2. Amount for which legal origin was checked

3. Amount for which sale was documented. Possibly not all permit holders have completed this step and, likewise, these data are not complete.

At present there are 68 points of inspection in the national territory including 20 ports, 24 international airports, 23 border points and one interior customs office, assisted by 71 inspectors that scrutinize imports and exports of wildlife in accordance with the precepts established in the General Law of Ecological Balance and Protection of the Environment, the Wildlife General Law, the Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES), the International Epizoothian Organization and the International Convention of Phytosanitary Protection.

d. Relationship Between CITES Offices and Fisheries Agencies

The CITES Follow-up Committee in Mexico is integrated by relevant government and independent agencies. The Committee coordinates the activities of the Scientific Authority, the Administrative Authority and the Law Application Authority, in order to determine the politics and actions of management and conservation of species listed in the Appendixes of CITES; identifying national priorities and revising verdicts and files on proposals for modifying, including species in, or eliminating species from the Appendixes of the Convention. The Committee also acts in coordination with the Secretary of International Affairs for generating the country's positions for the Conferences of the Parties and other pertinent forums. The Committee is also formed by the General Wildlife Directorate (DGVS), PROFEPA, the Coordinating Unit of International Affairs (UCAI), National Institute of Ecology (INE), National Forest Commission (CONAFOR), General

Directorate for Forest and Soil Administration (DGGFS), the National Commission for the Knowledge and Use of Biodiversity (CONABIO) and two fisheries agencies namely, the National Fisheries Institute (INP) and the National Aquaculture and Fishing Commission (CONAPESCA).

e. Magnitude of Exports

From 1998, export permits have been issued for commercializing the sale of Mexican seahorses. Due to the difficulty in determining the species from dried samples, this information is only available up to the genus level. It is worth mentioning that most exports were addressed to the USA, although few had a different final destination like China, Hong Kong and Australia. Research is currently being conducted in this regard.

It is worth mentioning that these figures indicate the amounts authorized for export per year, but do not indicate the actual amounts that have been exported. Permit holders usually request authorizations for exporting amounts that they consider can be sold or gotten.

In order to give an idea of the magnitude of trade by number of individuals, according to Baum and Vincent, the average dry weight of *H. erectus* is 2.28g ± 1.99g. For *H. erectus* and *H. reidi*, the average dry weight is 2.35g. Therefore approximately 425 individuals are considered to weigh 1 kg. Finally, for *H. ingens*, with an average dry weight of 4.18g ± 2.45g, 239 individuals are considered to weigh 1 kg.Baum and Vincent also present data on the amount of dry seahorses exported from Mexico to China, Hong Kong and the United States, according to the customs records in these countries.

Commercial catches were carried out before these species were included in the listing of protected species (NOM-059-SEMARNAT-2001). Starting in 2001, no permits have been issued and since 2002 no applications have been received.

Export of Live Individuals

In general, it could be said that the export of live individuals from Mexico does not exist. Nevertheless, Baum and Vincent report exports from Puerto Vallarta to Los Angeles (USA) in the late 1980s and at the early 1990s (when it was legal) and exports of *H. ingens* to a North American aquarium.

Also, they point out that in accordance with information obtained on interviewing wholesalers, it is believed that there are also exports from the cities of La Paz and Ensenada, in the Baja California peninsula, to the US. Unfortunately, the volumes of these exports are ignored. Export of cultured seahorses is allowed. However, these individuals are generally sold in the national market.

Table 3: Amount of Seahorses Exported from Mexico to China, Hong Kong and the United States, According to Customs Records from These Countries

Year	Destination	Amount (No.)	Amount (kg.)
1990	China	-	131
1996	USA (unknown origin – sent via Mexico)	1	-
1997	USA	9	-
	USA	-	35
1998	USA	449	-
	USA	-	38
1999	USA	6	-
	USA	-	36
	Australia (via USA)	50	-
	Hong Kong	-	140
2000	USA	-	31
	USA	1	-
	Hong Kong	-	23
	Hong Kong (re-exported to China, probably from the USA)	-	7607*

* Unofficial data

Source: Modified from Baum and Vincent (unpublished); customs data from China; Hong Kong and the USA

Table 4: Imports of Dry Seahorses Between 1998 and 2000*

Amount (pieces)	Origin	Transit	Date
1,000	U.S.A.	U.S.A.	30-Sep-98
720	Philippines	U.S.A.	10-Oct-00
288	Philippines	U.S.A.	10-Oct-00
60	Philippines	U.S.A.	10-Oct-00
720	Philippines	U.S.A.	10-Oct-00
TOTAL 2,788			

Source: Files of the General Wildlife Directorate, SEMARNAT.

Imports of Dry Individuals

Import volumes of dry seahorses are small as compared to exports, as shown in Table 4. Baum and Vincent's survey identified imports from Guatemala (Camaronero del Pacífico), which in 1992 exported between 3.5 and 5.8 kg (US$0.19 to US$0.29) of dry seahorses to Mexico, possibly in order to be re-exported to Asia. On the other hand, a shell retailer in Acapulco indicated that seahorses were imported from the Philippines in order to be marketed as souvenirs, reporting annual sales approaching 110 seahorses.

Imports of Live Individuals

At least seven wholesalers in Mexico City and one in Guadalajara have been identified as importing seahorses to Mexico for retail sale. Among the identified countries of origin are Fiji, Hawaii, Philippines, Indonesia (mainly via Los Angeles, USA) and Brazil, although some of these were possibly first exported via Singapore. These imports occur due to the low costs of the individuals, apart from small transportation costs from Los Angeles to Mexico City when compared to the cost from Mazatlán to Mexico City. According to the survey, total imports were estimated between 4,366 and 7,118 individuals/ year in the late 1990s and until 2000 (Baum and Vincent, unpublished).

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